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DoD SBIR / STTR

DETAILS - Awards Search Results

Program: SBIR

Agency: OSD

Field Office: AF/WL

TOPIC Number: OSD95-024

Control Number: 95WL7-046

Contract Number: F33615-96-C-5106

Phase: 2

Awarded In: 97

Award Amount: $749,797

Award Start Date: 19JUL96

Award Completion Date: 19JUL99

Proposal Title: Advanced Six-Degree-of-Freedom (6-D) Laser Measurement System

Principal Investigator Name: Dr. Kam C. Lau

Principal Investigator Phone: 301-330-8100

Firm

AUTOMATED PRECISION, INC.
7901-C Cessna Avenue
Gaithersburg, MD 20879

Woman Owned: N
Minority Owned: Y
Number of Employees: 15

Keywords: LASER MEASUREMENT SYSTEM MACHINE TOOL CALIBRATION ACCURACY IMPROVEMENT OR ENHANCEMENT

Abstract: The introduction of the 5-D laser measurement system (5-D LMS), developed by API in 1995, has achieved better than 80% time reduction in the geometric calibration of CNC machining center and coordinate measuring machine (CMM) when compared to the use of a conventional laser interferometer system. However, the 5-D can only measure in X, Y, Z, pitch and yaw, it is still limited by not being able to take roll measurements. The 6-D laser measurement system (6-D LMS) will integrate roll measurements with the other five error measurements, allowing all six error components to be determined in a single pass along an axis. No additional setup time is required for setting up the 6-D LMS. The new 6-D laser is projected to be producible at about the same selling price as the 5-D laser. At a better accuracy and faster performance time,the likely impact of the commercial introduction of the 6-D LMS will be its broad adoption by large and small MT and CMM builders and usersalike, down to the level of advanced machine shops. This should assist in keeping the machine tools of American industry in peak operatingcondition, producing parts with world-class dimensional accuracy. Neither the 5-D nor the 6-D LMS is known to have any counterpart, eitherin the marketplace now, or under development. API successfully completed Phase I of this project, within cost and schedule, confirming boththe feasibility and practicability of the 6-D LMS concept. On completion of the Phase II work proposed here, API is resolved to fund PhaseIII, and take the 6-D LMS to full commercialization following the paradigm it has established with commercializing the 5-D laser instrument.

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DoD SBIR / STTR

DETAILS - Awards Search Results

Program: SBIR

Agency: OSD

Field Office: AF/WL1

TOPIC Number: OSD95-024

Control Number: 95WL7-046

Contract Number: F33615-95-C-5549

Phase: 1

Awarded In: 96

Award Amount: $100,000

Award Start Date: 28JUL95

Award Completion Date: 28FEB96

Proposal Title: Advanced Six-Degree-of-Freedom (6-D) Laser Measurement System

Principal Investigator Name: Dr. Kam C. Lau

Principal Investigator Phone: 301-330-8100

Firm

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Keywords: LASER MEASUREMENT SYSTEM MACHINE TOOL CALIBRATION ACCURACY IMPROVEMENT OR ENHANCEMENT

Abstract: In order to remain competitive in today's global marketplace, U.S. manufacturers are constantly striving to hold tighter and tighter tolerances on the parts that they produce. What this means is that the manufacturer needs to better control the machines that they use, and in order to do that they need an instrument that can quickly and easily characterize the geometric properties of the machines being used. The proposed development will result in such an instrument. The new instrument will be able to save time and money by simultaneously measuring linear displacement, displacements in the other two orthogonal axes, androll, pitch, and yaw. The proposed work will build on the backgrounddevelopments at ADI, the proposer, and at the University of Michigan and at the University of North Carolina at Charlotte. In particular, the new instrument will be patterned after the already developed 5-D laser measurement systems, and add a sensitive roll detector which makes use of the same laser beam. The resulting instrument will be rugged, easy to use and precise. It will be capable of being produced at a cost that will make the instrument cost effective to own and to use. The prototype instrument will be demonstrated in a shop floor environment to further prove its usefulness and easy set up. What used to takedays to accomplish will be shown to require only hours instead. As part of the proposed work, an investigation will be undertaken to further define the expected market, both military and commercial, for the new instrument.

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